Cape Horn is confined to a channel, which is widened towards the south in proportion to the latitudinal breadth of the column, that is rushing to the east. Near the southern borders of this channel, the easterly winds commence, returning in eddies towards the west whence they are again carried eastwardly, in the current that rushes around Cape Horn.

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ART. VI.—*Plan of an Instrument for finding the true Lunar Distance;* invented by M. F. MAURY, Passed Midshipman, U. S. Navy.

G F H E, is a great circle of brass, standing upon three legs X *y* Z; it represents the horizon. A E, A F and B C, are arcs of great circles; they also are of brass, and their planes pass through O, a common centre.

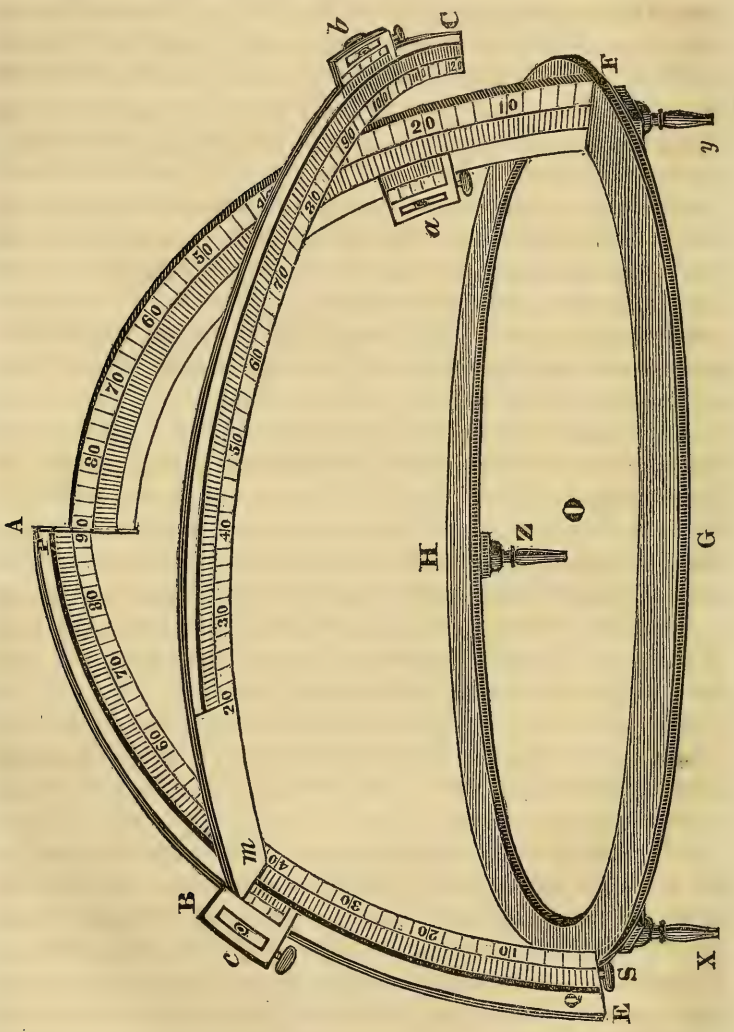
The periphery of G F H E, the middle curvature P Q, of A E, the concave circumference of B C, and the convex of A F, have equal radii centering in O.

A E, describes half of a hemisphere on the hinge at A, the axis of which, is that of the zenith and nadir, and of course passes through O. The extremity F, of the arc A F, is fixed in the plane of G F H E, and the extremity E, of A E, revolves in the plane of G F H E, and along its circumference, describing arcs of equal circles, from the centre O, until it stands in the plane of A F, the two then represent a semicircle. By means of the screw S, which presses E to G F H E, E is placed and fixed at any distance from F. The hinge at A, is of brass turning against steel, which lessens friction.

A E and A F, are arcs of the azimuth circles, in which the sun or a star and the moon are at the time of taking a lunar observation. Each is 90° and graduated to every 10′ or 15′ on a slip of finer metal, let in for that purpose.

B C, is an arc of the geocentric circle, in the plane of which, the sun and moon appear, when the observation is taken; it is graduated as the other arcs are, but from 20° to 120°. It is intended first to set off the *apparent*, and then to measure the *true* lunar distance. To assist in transferring the altitudes and distance with exactness, from the sextants with which they are taken, to the arcs of the instrument, each of them is provided with a vernier scale, *a*, *b*, *c*, having a tangent and a fixture screw respectively attached to them. The extremity *m*, of B C, is hinged to zero of the vernier *c*; the axis of this hinge

is moveable along A E, around the centre O; it is the line of intersection of the plane of B C with that of A E. The inner curvature of B C, moves in the plane of A E, and along its middle curvature P Q, as the vernier *c*, travels along A E, and the plane of the arc B C, always passes through the common centre O.




With the observed altitudes and distance of the two bodies, taken in the usual manner, for finding longitude from a lunar observation, the *true* distance is determined, by first marking off on the two arcs

A E, A F, the altitudes of the centre of the sun or a star, and the moon, corrected for *dip* and *semi diameter*, and their apparent distance on B C. The verniers *a*, *b*, are fixed at the altitude and distance, by means of the fixture screw—the two legs A E, A F, are opened until zero of the verniers *a* and *b* are in the same line with regard to the centre O; the screw S, is then turned, and the two legs A E, A F, are fixed at that opening—the two altitudes are then corrected for parallax and refraction—(say the sun's altitude has been set off on A E, the moon's on A F,) move the vernier *c* to which *m* is hinged, down to the degrees, minutes and seconds, corresponding to the sun's corrected altitude, and turn the fixture screw. Move *a* up to the moon's altitude, corrected for parallax and refraction, and fix the vernier at it—then move the vernier *b* and turn the arc B C on its hinge until zero of *b* stand in a line with zero on *a*, and the degrees, minutes and seconds, upon which *b* stands, will be the *true lunar* distance from which the longitude is determined, as it is in all other methods.

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ART. VII.—*On the Color of the Air and of deep waters, and on some other Analogous Fugitive Colors;* by COUNT XAVIER DE MAISTRE.

Translated from the Bib. Univ. by Prof. J. GRISCOM.

THE blue color of the sky is accounted for, by supposing that the sun's light reflected by the surface of the earth, is not entirely transmitted by the atmosphere and lost in space, but that the molecules of air reflect and disperse the blue ray. Why this ray is reflected in preference to the indigo and violet which are more refrangible and appear to be more easily reflected, is a circumstance not accounted for.

The same blue reflexion is observed in deep sea water, and in lakes, and rivers, when they are limpid.

The same singular phenomenon is also witnessed in various substances of different natures which have no apparent analogy; thus opaline substances are blue by reflexion: the noble opal, (independently of the partial rays which give so high a value to this stone and which are attributed to natural fissures*) reflects a general blue color

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* This was the opinion of the celebrated Haüy.